B.M.S. EDUCATION TRUST
B.M.S.COLLEGE OF ENGINEERING,
BANGALORE-19
(Autonomous College under VTU)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

DATABASE MANAGEMENT SYSTEM LABORATORY MANUAL 19CS4PCDBM

PROGRAM: BACHELOR OF ENGINEERING
SEMESTER: IV
SESSION: 2021
COURSE CODE: 19CS4PCDBM
COURSE TITLE: DATABASE MANAGEMENT SYSTEM
CREDITS: 4
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```
create database Insurance;,

use Insurance;

CREATE TABLE PERSON(DRIVER_ID VARCHAR(10),NAME VARCHAR(20),ADDRESS VARCHAR(15),PRIMARY KEY(DRIVER_ID));

show tables;

desc PERSON;

SELECT *FROM PERSON;

create table car(regno varchar(10),Model varchar(20),Year date,Primary key(Regno));

create table Accident(report_no int,ADATE DATE,Location varchar(15),Primary key(report_no));

create table owns(driver_id varchar(10),regno varchar(10),primary key(driver_id,regno),

foreign key(driver_id) references person(driver_id) on delete cascade, foreign key(regno) references car(regno) on delete cascade);

CREATE TABLE PARTICIPATED(driver_id varchar(10),regno varchar(10),report_no int, damage_amt float,

foreign key (driver_id,regno) references OWNS(driver_id,regno) ON DELETE CASCADE,

foreign key (REPORT_NO) references ACCIDENT(REPORT_NO) ON DELETE CASCADE);

show tables;

insert into PERSON(DRIVER_ID,NAME,ADDRESS)values('1111','RAMU', 'K.S.LAYOUT');

insert into PERSON(DRIVER_ID,NAME,ADDRESS)values('2222','JOHN', 'INDIRANAGAR');

insert into PERSON(DRIVER_ID,NAME,ADDRESS)values('3333','PRIYA','JAYANAGAR');

insert into PERSON(DRIVER_ID,NAME,ADDRESS)values('4444','GOPAL','WHITEFIELD');

insert into PERSON(DRIVER_ID,NAME,ADDRESS)values('5555','LATHA',' VIJAYANAGAR');

COMMIT;

desc PERSON;

SELECT *FROM PERSON;

insert into car(regno,Model,Year)values('KA04Q2301','MARUTHI-DX', '2000-10-11');

insert into car(regno,Model,Year)values('KA05P1000',' FORDICON','2000-09-08');

insert into car(regno,Model,Year)values('KA03L1234','ZEN-VXI', '1999-07-06');

insert into car(regno,Model,Year)values('KA03L9999',' MARUTH-DX', '2002-06-05');

insert into car(regno,Model,Year)values('KA01P4020',' INDICA-VX', '2002-05-04');
```

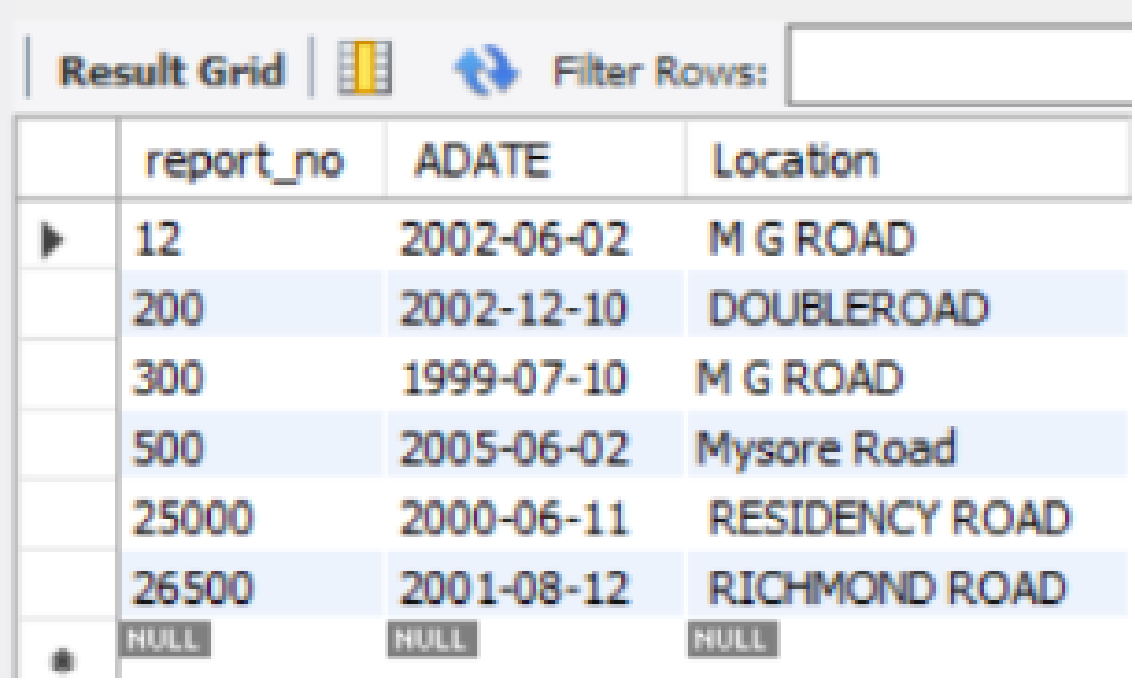
```
COMMIT;

desc car;

SELECT *FROM car;

insert into Accident(report_no,ADATE,Location)values('12',' 2002-06-02',' M G ROAD');

insert into Accident(report_no,ADATE,Location)values('200',' 2002-12-10',' DOUBLEROAD');

insert into Accident(report_no,ADATE,Location)values('300',' 1999-07-10','M G ROAD');

insert into Accident(report_no,ADATE,Location)values('25000',' 2000-06-11',' RESIDENCY ROAD');

insert into Accident(report_no,ADATE,Location)values('26500',' 2001-08-12',' RICHMOND ROAD');

COMMIT;

desc Accident;

SELECT *FROM Accident;

insert into owns(driver_id,regno)values('1111', 'KA04Q2301');

insert into owns(driver_id,regno)values('1111','KA05P1000');

insert into owns(driver_id,regno)values('2222','KA03L1234');

insert into owns(driver_id,regno)values('3333','KA03L9999');

insert into owns(driver_id,regno)values('4444','KA01P4020');

COMMIT;

desc owns;

SELECT *FROM owns;

insert into PARTICIPATED(driver_id,regno,report_no,damage_amt)values('1111', 'KA04Q2301',' 12','
20000');

insert into PARTICIPATED(driver_id,regno,report_no,damage_amt)values('2222','KA03L1234','200','
500');

insert into PARTICIPATED(driver_id,regno,report_no,damage_amt)values('3333','KA03L9999','300','
10000');

insert into PARTICIPATED(driver_id,regno,report_no,damage_amt)values('4444','KA01P4020','25000
','2375');

insert into
PARTICIPATED(driver_id,regno,report_no,damage_amt)values('1111','KA05P1000','26500','70000');

COMMIT;
```

```
desc PARTICIPATED ;
SELECT *FROM PARTICIPATED;
/*
a. Update the damage amount for the car with a specific Regno in the accident with report number 12 to
25000.
*/
UPDATE PARTICIPATED SET DAMAGE_AMT=25000 WHERE REPORT_NO =12 AND REGNO='KA04Q2301';
COMMIT;
desc PARTICIPATED ;
SELECT *FROM PARTICIPATED;
/*


b. Add a new accident to the database
*/
insert into Accident(report_no,ADATE,Location)values('500',' 2005-06-02','Mysore Road');
desc Accident;
SELECT *FROM Accident;

/*
iv. Find the total number of people who owned cars that involved in accidents in 2008
*/
select count(*) from Accident where year(ADATE)=2008;

/*
V. Find the number of accidents in which cars belonging to a specific model were involved
*/
SELECT COUNT(A.REPORT_NO) FROM ACCIDENT A, PARTICIPATED P, CAR C
WHERE A.REPORT_NO=P.REPORT_NO AND
```

P.REGNO=C.REGNO AND C.MODEL='MARUTHI-DX';

OUTPUT:

SELECT * FROM Insurance.accident;



report_no	ADATE	Location
12	2002-06-02	M G ROAD
200	2002-12-10	DOUBLEROAD
300	1999-07-10	M G ROAD
500	2005-06-02	Mysore Road
25000	2000-06-11	RESIDENCY ROAD
26500	2001-08-12	RICHMOND ROAD
NULL	NULL	NULL

SELECT * FROM Insurance.owns;

	driver_id	regno
▶	4444	KA01P4020
	2222	KA03L1234
	3333	KA03L9999
	1111	KA04Q2301
	1111	KA05P1000
*	NULL	NULL

SELECT * FROM Insurance.person;

	DRIVER_ID	NAME	ADDRESS
▶	1111	RAMU	K.S.LAYOUT
	2222	JOHN	INDIRANAGAR
	3333	PRIYA	JAYANAGAR
	4444	GOPAL	WHITEFIELD
	5555	LATHA	VIJAYANAGAR
*	NULL	NULL	NULL

```
create database banking;
use banking;

create table branch(
branch_name varchar(30) primary key,
branch_city varchar(30),
assets real);

create table accounts(
accno int primary key,
branch_name varchar(30),
balance real,
foreign key (branch_name) references branch(branch_name) on delete cascade on update cascade);

create table customer(
customer_name varchar(30) primary key,
customer_street varchar(20),
customer_city varchar(20));

create table depositor(
customer_name varchar(30),
accno int,
primary key(customer_name ,accno),
foreign key (accno) references accounts(accno) on delete cascade on update cascade,
foreign key (customer_name) references customer(customer_name) on delete cascade on update
cascade);

create table loan(
loan_number int primary key,
```

branch_name varchar(30),

amount real,

foreign key (branch_name) references branch(branch_name)

);

create table borrower (

customer_name varchar(30),

loan_number int,

primary key(customer_name, loan_number),

foreign key (customer_name) references customer(customer_name) on delete cascade on update cascade,

foreign key (loan_number) references loan(loan_number) on delete cascade on update cascade);

show tables;

insert into branch(branch_name,branch_city,assets) values

('A','Bangalore',190000),

('B','Bangalore',200000),

('C','Delhi',235344),

('D','Chennai',1050560),

('E','Chennai',678909);

select *from branch;

branch_name	branch_city	assets
A	Bangalore	190000
B	Bangalore	200000
C	Delhi	235344
D	Chennai	1050560
E	Chennai	678909
NULL	NULL	NULL

insert into accounts(accno,branch_name,balance) VALUES

(1001,'A',10000),

(1002,'B',5000),

(1003,'C',7500),

(1004,'D',50000),

(1005,'D',75000),

(1006,'E',560),

(1007,"B",500),

(1008,"B",1500);

select *from accounts;

accno	branch_name	balance
1001	A	10000
1002	B	5000
1004	D	50000
1005	D	75000
1006	E	560
1007	B	500
1008	B	1500
NULL	NULL	NULL

insert into customer(customer_name,customer_street,customer_city) VALUES

("Ravi","Dasarahalli","Bangalore"),

("Shyam","Indiranagar","Delhi"),

("Seema","Vasantnagar","Chennai"),

("Arpita","Church Street","Bangalore"),

("Vinay","MG Road","Chennai");

select *from customer;

	customer_name	customer_street	customer_city
▶	Arpita	Church Street	Bangalore
	Ravi	Dasarahalli	Bangalore
	Seema	Vasantnagar	Chennai
	Shyam	Indiranagar	Delhi
	Vinay	MG Road	Chennai
●	NULL	NULL	NULL

insert into depositor(customer_name,accno) VALUES

("Ravi",1001),

("Ravi",1002),

("Shyam",1003),

("Seema",1004),

("Seema",1005),

("Arpita",1006),

("Vinay",1007),

("Vinay",1008);

select *from depositor;

	customer_name	accno
▶	Ravi	1001
	Ravi	1002
	Seema	1004
	Seema	1005
	Arpita	1006
	Vinay	1007
	Vinay	1008
*	NULL	NULL

insert into loan(loan_number,branch_name,amount) VALUES

(001,'A',10000),

(002,'B',25000),

(003,'B',250000),

(004,'C',5000),

(005,'E',90000);

select *from loan;

	loan_number	branch_name	amount
▶	1	A	10000
	2	B	25000
	3	B	250000
	4	C	5000
	5	E	90000
*	NULL	NULL	NULL

s

```
insert into borrower(customer_name,loan_number) VALUES
("Arpita",001),
("Ravi",002),
("Arpita",003),
("Shyam",004),
("Vinay",005);
select *from borrower;
```

	customer_name	loan_number
▶	Arpita	1
	Ravi	2
	Arpita	3
	Shyam	4
	Vinay	5
*	NULL	NULL

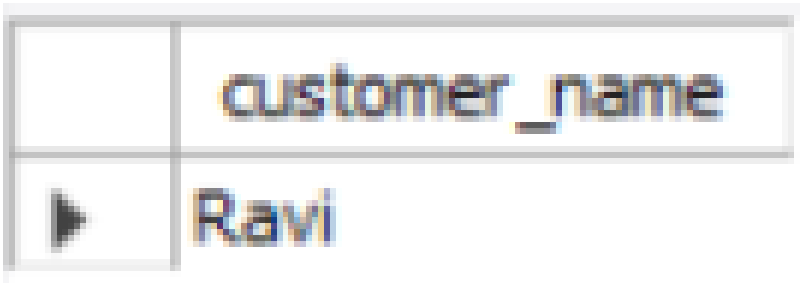
/*iii. Find all the customers who have at least two accounts at the Main branch */

```
select customer_name from depositor
join accounts on depositor.accno = accounts.accno where accounts.branch_name = "D"
group by depositor.customer_name having count(depositor.customer_name) >=2;
```

	customer_name
▶	Seema

/* iv. Find all the customers who have an account at all the branches located in a specific city.*/

```
select customer_name from depositor
join accounts on accounts.accno = depositor.accno
join branch on branch.branch_name = accounts.branch_name
where branch.branch_city = "Bangalore"
GROUP BY depositor.customer_name
having count(DISTINCT branch.branch_name) = (SELECT COUNT(branch_name)
FROM branch
WHERE branch_city = 'Bangalore');
```



	customer_name
▶	Ravi

```
/*v. Demonstrate how you delete all account tuples at every branch located in a specific city.*/
delete from accounts where branch_name in
(select branch_name from branch where branch_city="Delhi");
select *from accounts;
```

	accno	branch_name	balance
▶	1001	A	10000
	1002	B	5000
	1004	D	50000
	1005	D	75000
	1006	E	560
	1007	B	500
	1008	B	1500
*	NULL	NULL	NULL

```
create database Supplier;
use Supplier;

create table Suppliers(
sid varchar(20) ,
sname varchar(20),
city varchar(20),
primary key(sid)
);
desc Suppliers;

create table Parts(
pid integer,
pname varchar(20),
color varchar(20),
primary key(pid)
);
desc Parts;

create table Catalog(
sid varchar(20),
pid integer,
cost real,
primary key(sid,pid),
foreign key(sid) references Suppliers(sid),
foreign key(pid) references Parts(pid)
);
desc Catalog;
```

```
insert into Suppliers values(10001,'Acme Widget','Bangalore');
insert into Suppliers values(10002,'Johns','Kolkata');
insert into Suppliers values(10003,'Vimal','Mumbai');
insert into Suppliers values(10004,'Reliance','Delhi');
select *from Suppliers;
```

	sid	sname	city
▶	10001	Acme Widget	Bangalore
	10002	Johns	Kolkata
	10003	Vimal	Mumbai
	10004	Reliance	Delhi
*	NULL	NULL	NULL

```
insert into Parts values(20001,'Book','Red');
insert into Parts values(20002,'Pen','Red');
insert into Parts values(20003,'Pencil','green');
insert into Parts values(20004,'Mobile','green');
insert into Parts values(20005,'Charger','Black');
select *from Parts;
```

	pid	pname	color
▶	20001	Book	Red
	20002	Pen	Red
	20003	Pencil	green
	20004	Mobile	green
	20005	Charger	Black
*	NULL	NULL	NULL

```
insert into Catalog values(10001,20001,10);
insert into Catalog values(10001,20002,10);
insert into Catalog values(10001,20003,30);
insert into Catalog values(10001,20004,10);
insert into Catalog values(10001,20005,10);
insert into Catalog values(10002,20001,10);
insert into Catalog values(10002,20002,20);
insert into Catalog values(10003,20003,30);
insert into Catalog values(10004,20003,40);
select *from Catalog;
```

sid	pid	cost
10001	20001	10
10001	20002	10
10001	20003	30
10001	20004	10
10001	20005	10
10002	20001	10
10002	20002	20
10003	20003	30
10004	20003	40
NULL	NULL	NULL

```
select distinct P.pname from Parts P, Catalog c where P.pid=C.pid;
```

	pname
▶	Book
	Pen
	Pencil
	Mobile
	Charger

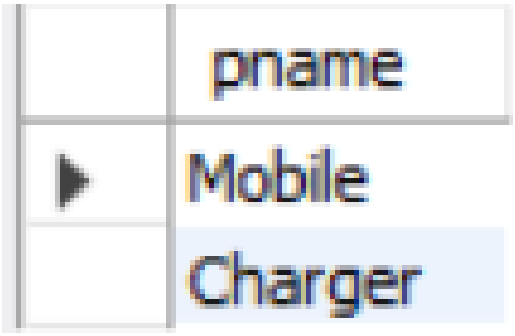
select S.sname from SUPPLIERS S where not exists (select P.pid from PARTS P where not exists (select C.sid from CATALOG C where C.sid = S.sid and C.pid = P.pid));

	sname
▶	Acme Widget

select S.sname from SUPPLIERS S where not exists (select P.pid from PARTS P where P.color = 'Red' and (not exists (select C.sid from CATALOG C where C.sid = S.sid and C.pid = P.pid)));

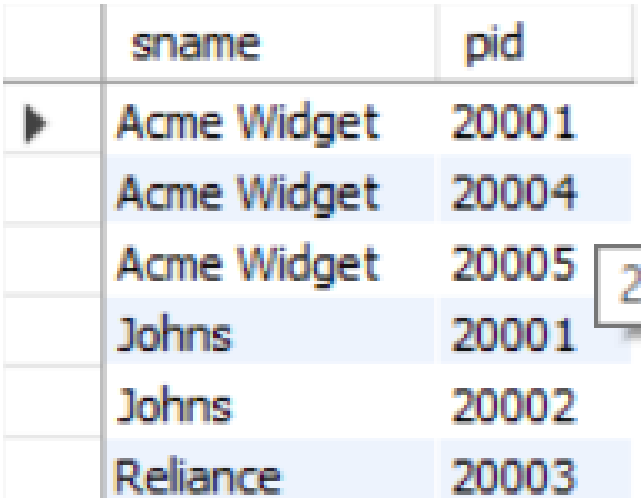
	sname
▶	Acme Widget
	Johns

select P.pname from PARTS P, CATALOG C, SUPPLIERS S where P.pid = C.pid and C.sid = S.sid and S.sname = 'Acme Widget' and not exists (select * from CATALOG C1, SUPPLIERS S1 where P.pid = C1.pid and C1.sid = S1.sid and S1.sname <> 'Acme Widget');



pname
Mobile
Charger

select distinct c.sid from Catalog c where c.cost >(select avg(ca.cost) from Catalog ca where ca.pid=c.pid);



sname	pid
Acme Widget	20001
Acme Widget	20004
Acme Widget	20005
Johns	20001
Johns	20002
Reliance	20003

select s.sname ,p.pid from Suppliers s, Catalog c, Parts p where s.sid=c.sid and c.pid =p.pid and c.cost=(select max(ca.cost) from catalog ca where ca.pid=p.pid);

	sname	pid
▶	Acme Widget	20001
	Acme Widget	20004
	Acme Widget	20005
	Johns	20001
	Johns	20002
	Reliance	20003

```
create database Lab4;

use Lab4;


create table student(snum int, sname varchar(10), major varchar(2), lvl varchar(2), age int,primary key (snum));

desc student;


create table faculty(fid int, fname varchar(20), deptid int,primary key(fid));

desc faculty;


create table class(cname varchar(20), meetsat timestamp, room varchar(10), fid int,primary key (cname),foreign key(fid) references faculty(fid));

desc class;


create table enrolled(snum int, cname varchar(20),primary key(snum,cname),

foreign key(snum) references student(snum),

foreign key(cname) references class(cname));

desc enrolled;


insert into student values(1, 'jhon', 'CS', 'Sr', 19);

insert into student values(2, 'Smith', 'CS', 'Jr', 20);

insert into student values(3 , 'Jacob', 'CV', 'Sr', 20);

insert into student values(4, 'Tom ', 'CS', 'Jr', 20);

insert into student values(5, 'Rahul', 'CS', 'Jr', 20);

insert into student values(6, 'Rita', 'CS', 'Sr', 21);

select * from student;
```

snum	sname	major	lvl	age
1	jhon	CS	Sr	19
2	Smith	CS	Jr	20
3	Jacob	CV	Sr	20
4	Tom	CS	Jr	20
5	Rahul	CS	Jr	20
6	Rita	CS	Sr	21
NULL	NULL	NULL	NULL	NULL

```
insert into faculty values(11, 'Harish', 1000);
insert into faculty values(12, 'MV', 1000);
insert into faculty values(13 , 'Mira', 1001);
insert into faculty values(14, 'Shiva', 1002);
insert into faculty values(15, 'Nupur', 1000);
select * from faculty;
```

fid	fname	deptid
11	Harish	1000
12	MV	1000
13	Mira	1001
14	Shiva	1002
15	Nupur	1000
NULL	NULL	NULL

```
insert into class values('class1', '12/11/15 10:15:16', 'R1', 14);
insert into class values('class10', '12/11/15 10:15:16', 'R128', 14);
insert into class values('class2', '12/11/15 10:15:20', 'R2', 12);
insert into class values('class3', '12/11/15 10:15:25', 'R3', 12);
insert into class values('class4', '12/11/15 20:15:20', 'R4', 14);
insert into class values('class5', '12/11/15 20:15:20', 'R3', 15);
insert into class values('class6', '12/11/15 13:20:20', 'R2', 14);
insert into class values('class7', '12/11/15 10:10:10', 'R3', 14);
```

select * from class;

cname	meetsat	room	fid
class1	2012-11-15 10:15:16	R1	14
class10	2012-11-15 10:15:16	R128	14
class2	2012-11-15 10:15:20	R2	12
class3	2012-11-15 10:15:25	R3	12
class4	2012-11-15 20:15:20	R4	14
class5	2012-11-15 20:15:20	R3	15
class6	2012-11-15 13:20:20	R2	14
class7	2012-11-15 10:10:10	R3	14
NULL	NULL	NULL	NULL

insert into enrolled values(1, 'class1');

insert into enrolled values(2, 'class1');

insert into enrolled values(3, 'class3');

insert into enrolled values(4, 'class3');

insert into enrolled values(5, 'class4');

insert into enrolled values(1, 'class5');

insert into enrolled values(2, 'class5');

insert into enrolled values(3, 'class5');

insert into enrolled values(4, 'class5');

insert into enrolled values(5, 'class5');

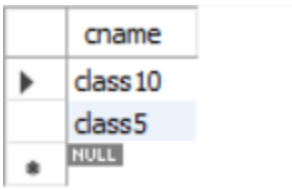
select * from enrolled;

	snum	cname
▶	1	class1
	2	class1
	3	class3
	4	class3
	5	class4
	1	class5
	2	class5
	3	class5
	4	class5
	5	class5
*	NULL	NULL

```
SELECT DISTINCT S.sname
FROM student S, class C, enrolled E, faculty F
WHERE S.snum = E.snum AND E.cname = C.cname AND C.fid = F.fid AND
F.fname = 'Harish' AND S.lvl = 'Jr';
```

	sname

```
SELECT C.cname
FROM class C
WHERE C.room = 'R128'
OR C.cname IN (SELECT E.cname
FROM enrolled E
GROUP BY E.cname
HAVING COUNT(*) >= 5);
```



	cname
▶	class10
	class5
*	NULL

SELECT DISTINCT S.sname

FROM student S

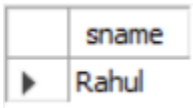
WHERE S.snum IN (SELECT E1.snum

FROM enrolled E1, enrolled E2, class C1, class C2

WHERE E1.snum = E2.snum AND E1.cname <> E2.cname

AND E1.cname = C1.cname

AND E2.cname = C2.cname AND C1.meetsat = C2.meetsat);



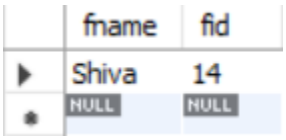
	sname
▶	Rahul

SELECT f.fname,f.fid

FROM faculty f

WHERE f.fid in (SELECT fid FROM class

GROUP BY fid HAVING COUNT(*)=(SELECT COUNT(DISTINCT room) FROM class));



	fname	fid
▶	Shiva	14
*	NULL	NULL

SELECT DISTINCT F.fname

FROM faculty F

WHERE 5 > (SELECT COUNT(E.snum)

FROM class C, enrolled E

WHERE C.cname = E.cname

AND C.fid = F.fid);

	fname
▶	Harish
	MV
	Mira
	Shiva

SELECT DISTINCT S.sname

FROM student S

WHERE S.snum NOT IN (SELECT E.snum

FROM enrolled E);

	sname
▶	Rita

SELECT S.age, S.lvl

FROM Student S

GROUP BY S.age, S.lvl

HAVING S.lvl IN (SELECT S1.lvl FROM Student S1

WHERE S1.age = S.age

GROUP BY S1.lvl, S1.age

HAVING COUNT(*) >= ALL (SELECT COUNT(*)

FROM Student S2

WHERE s1.age = S2.age

GROUP BY S2.lvl, S2.age));

	age	lvl
▶	19	Sr
	20	Jr
	21	Sr

```
drop database Lab5;
create database Lab5;
use Lab5;

create table flights(
flno int,
   fromplace varchar(15),
   toplace varchar(15),
   distance int,
   departs datetime,
   arrives datetime,
   price int,
   primary key (flno));
desc flights;

create table aircraft(
aid int,
   aname varchar(15),
   cruisingrange int,
   primary key (aid));
desc aircraft;

create table employees (
eid int,
   ename varchar(15),
   salary int,
   primary key (eid));
desc employees;
```

```
create table certified (
eid int,
   aid int,
   foreign key (eid) references employees(eid),
   foreign key (aid) references aircraft(aid));
desc certified;



insert into flights values(101, 'Bangalore', 'Delhi', 2500, '2005-05-13 07:15:31', '2005-05-13 18:15:31',
5000);
insert into flights values(102, 'Bangalore', 'Lucknow', 3000, '2013-05-05 07:15:31', '2013-05-05
11:15:31', 6000);
insert into flights values(103, 'Lucknow', 'Delhi', 500, '2013-05-05 12:15:31', '2013-05-05 17:15:31',
3000);
insert into flights values(107, 'Bangalore', 'Frankfurt', 8000, '2013-05-05 07:15:31', '2013-05-05
22:15:31', 60000);
insert into flights values(104, 'Bangalore', 'Frankfurt', 8500, '2013-05-05 07:15:31', '2013-05-05
23:15:31', 75000);
insert into flights values(105, 'Kolkata', 'Delhi', 3400, '2013-05-05 07:15:31', '2013-05-05 09:15:31',
7000);
insert into flights values(106, 'Bangalore', 'Kolkata', 1000, '2013-05-05 01:15:30', '2013-05-05 09:20:30',
10000);
insert into flights values(108, 'Lucknow', 'Kolkata', 1000, '2013-05-05 11:30:30', '2013-05-05 15:20:30',
10000);
select * from flights;


insert into aircraft values(101, '747', 3000);
insert into aircraft values(102, 'Boeing', 900);
insert into aircraft values(103, '647', 800);
insert into aircraft values(104, 'Dreamliner', 10000);
insert into aircraft values(105, 'Boeing', 3500);
insert into aircraft values(106, '707', 1500);
```

```
insert into aircraft values(107, 'Dream', 120000);
insert into aircraft values(108, '707', 760);
insert into aircraft values(109, '747', 1000);
select * from aircraft;

insert into employees values(701, 'A', 50000);
insert into employees values(702, 'B', 100000);
insert into employees values(703, 'C', 150000);
insert into employees values(704, 'D', 90000);
insert into employees values(705, 'E', 40000);
insert into employees values(706, 'F', 60000);
insert into employees values(707, 'G', 90000);
select * from employees;

insert into certified values(701, 101);
insert into certified values(701, 102);
insert into certified values(701, 106);
insert into certified values(701, 105);
insert into certified values(702, 104);
insert into certified values(703, 104);
insert into certified values(704, 104);
insert into certified values(702, 107);
insert into certified values(703, 107);
insert into certified values(704, 107);
insert into certified values(702, 101);
insert into certified values(702, 108);
insert into certified values(701, 109);
select * from certified;
```

```
select distinct a.aname from aircraft a where a.aid in (
select c.aid from certified c, employees e where
   c.eid = e.eid and not exists(
select * from employees e1 where e1.eid=e.eid and e1.salary<80000
   ));
```

	aname
▶	747
	Dreamliner
	Dream
	707

```
select max(a.cruisingrange), c.eid from certified c, aircraft a
where c.aid = a.aid group by c.eid having count(c.eid)>3;
```

	max(a.cruisingrange)	eid
▶	3500	701
	120000	702

```
select ename from employees where salary <(
select min(price) from flights where fromplace='Bangalore' and toplace='Frankfurt');
```

	ename
▶	A
	E

```
select avg(e.salary), c.aid from certified c, employees e where c.aid in(
select aid from aircraft where cruisingrange>1000) and e.eid = c.eid group by c.aid;
```

	avg(e.salary)	aid
▶	75000.0000	101
	113333.3333	104
	50000.0000	105
	50000.0000	106
	113333.3333	107

```
select ename from employees where eid in(
select eid from certified where aid in(
select aid from aircraft where aname = 'Boeing'));
```

	ename
▶	A

```
select aname from aircraft where cruisingrange > any
(select distance from flights where fromplace='Bangalore' and toplace='Delhi');
```

	aname
▶	747
	Dreamliner
	Boeing
	Dream

```
select F.flno, F.departs
from flights F
Where F.flno in ( ( select F0.flno
from flights F0
where F0.fromplace = 'Bangalore' and F0.toplace = 'Kolkata'
and extract(hour from F0.arrives) < 18 )
union
( select F0.flno
```

```
from flights F0, flights F1
where F0.fromplace = 'Bangalore' and F0.toplace <> 'Kolkata'
and F0.toplace = F1.fromplace and F1.toplace = 'Kolkata'
and F1.departs > F0.arrives
and extract(hour from F1.arrives) < 18)
union
( select F0.flno
from flights F0, flights F1, flights F2
where F0.fromplace = 'Bangalore'
and F0.toplace = F1.fromplace
and F1.toplace = F2.fromplace
and F2.toplace = 'Kolkata'
and F0.toplace <> 'Kolkata'
and F1.toplace <> 'Kolkata'
and F1.departs > F0.arrives
and F2.departs > F1.arrives
and extract(hour from F2.arrives) < 18));
```

flno	departs
102	2013-05-05 07:15:31
106	2013-05-05 01:15:30